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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536.000	03/27/2000	Andrew D. Bailey III	LAMIP130/P0566	6323
22434	7590	11/25/2003	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 778 BERKELEY, CA 94704-0778			ALEJANDRO MULERO, LUZ L	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 11/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/536,000

**Applicant(s)**

BAILEY ET AL.

**Examiner**

Luz L. Alejandro

**Art Unit**

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 28-41 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 28-38, 40-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_, is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/26/03 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 28-38, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setoyama et al., U.S. Patent 6,196,155 in view of Sakai, U.S. Patent 5,855,725 and further in view of Sekine et al., U.S. Patent 5,444,207.

Setoyama et al. shows the invention as claimed including a plasma processing apparatus for processing a substrate 4 comprising: a process chamber 1, defined at least in part by a top and a bottom end and a wall extending between the top end and the bottom end, within which a plasma is ignited and sustained for the processing; a magnetic array having a plurality of magnetic elements 20a and 20b, that are disposed within the periphery of the chamber around the outside of the wall, the plurality of elements being configured to produce a magnetic field establishing a plurality of cusp patterns on the wall; and devices 14 and 15, for rotating the magnetic elements as to change the cusp pattern of the magnetic field (see figs. 1-2 and their descriptions). Furthermore, note that Setoyama et al. discloses the use of an apparatus comprising an RF antenna adjacent to and outside of the process chamber (see figs. 4a and 4b and its description),

Setoyama et al. does not expressly disclose that the plurality of magnet elements expands substantially from the top end and the bottom end of the process chamber. Sakai discloses a magnet array 5 that spans from the top end to the bottom end of the process chamber 1 (see fig. 1). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Setoyama et al. so as to include a magnet array where each magnet

spans from the top to the bottom end of the processing chamber because such magnet arrangement is suitable to produce a magnetic field.

Setoyama et al. and Sakai do not expressly disclose a device for rotating magnetic fields of the plurality of magnetic elements so that each magnetic field of each magnetic element is individually rotated around individual axes of rotation, wherein each magnetic element has an individual axis of rotation passing through the magnetic element. Sekine et al. discloses an apparatus comprising a device 104 for rotating magnetic fields of a plurality of magnetic elements wherein each magnetic field of each magnetic element is individually rotated around individual axes of rotation, wherein each magnetic element has an individual axis of rotation passing through the magnetic element (see col. 23-lines 1-5). Additionally, note that the apparatus is capable of rotating each magnet individually at a same angular speed and angular direction around an individual axis of rotation. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Setoyama et al. modified by Sakai so as to comprise a device for rotating magnetic fields of the plurality of magnetic elements so that each magnetic element is individually rotated around individual axes of rotation, as taught by Sekine et al., in order to rotate the magnetic field without changing the respective positions of the magnet elements.

Setoyama et al. does not expressly disclose that the substrate support is a chuck, but official notice was taken in the office action mailed 6/27/02 that such means is well known and used in the art for securely supporting and holding substrates in the

processing chamber, and its inclusion in the apparatus disclosed by the Setoyama et al. reference would be prima facie obvious, and therefore this limitation is taken to be admitted prior art. Also, Setoyama et al. does not expressly disclose that the devices 14 and 15 are connected between the plurality of magnetic elements and the process chamber, but there is no evidence that such device arrangement would affect the overall performance of the apparatus.

Setoyama et al. further discloses that the magnetic elements are permanent magnets that are axially oriented about the periphery of the process chamber. Also, it is inherent from fig. 1 that the plurality of magnetic elements create a stronger magnetic field at the wall and a weaker magnetic field above the substrate, and that the magnetic field has an azimuthally symmetric radial gradient. Furthermore, note that the magnetic field at the substrate of the apparatus of Setoyama et al. is substantially zero and the axis of rotation for each magnet extends along the length of the magnet and is parallel to the chamber axis.

### ***Response to Arguments***


Applicant's arguments and the declaration filed 8/26/03 have been fully considered and are persuasive to overcome rejections involving the Bailey, III et al. reference, U.S. Patent 6,341,754. However, applicant's arguments with respect to the rejection under 35 USC 103 of claims 1-8, 28-38, and 40-41 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-4545. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

November 17, 2003